

REMARKS

Applicants' attorney thanks the Examiner for his comments. In order to clarify the invention, independent Claims 1, 18 and 28 have been amended to indicate that the second superabsorbent polymer precursor composition initially contacts the first superabsorbent polymer precursor composition after being applied to the fibrous web (Claims 1 and 18) or after being applied to the nonwoven web (Claim 28). This amendment is supported on page 12, lines 13-20 of the specification. The independent claims are further amended to replace "adding" with "applying," and to indicate that the microdroplets and superabsorbent particles are "spaced apart" as indicated on page 24, first full paragraph.

While the difference between "adding" and "applying" may appear subtle, the latter means that the superabsorbent particle precursor compositions remain in microdroplet form after contacting the fibrous web or nonwoven web. There are spaces between the microdroplets at all times, and the microdroplets do not merge together upon application to form a coating. The reason that the microdroplets of first superabsorbent polymer precursor composition, second superabsorbent polymer precursor composition and superabsorbent particles have about the same recited size range arises from the nature of the recited non-contact printing process. The non-contact printing process permits the first and second superabsorbent polymer precursor compositions to be separately applied as microdroplets to precisely the same locations, whereupon they mix upon contact and then react. Thus, the microdroplet size range of the first and second superabsorbent polymer precursor compositions after application is about the same as the superabsorbent polymer particles.

If either one of the superabsorbent polymer precursor compositions is applied as a continuous coating, and the other is applied as microdroplets, then the resulting superabsorbent particles may have a size corresponding to the microdroplet size of the applied superabsorbent polymer precursor composition. However, only one of the superabsorbent polymer precursor compositions will have been applied as microdroplets, instead of both as required by Applicants' claims.

If two superabsorbent polymer precursor compositions are mixed together before being applied as microdroplets, then they will not have been separately applied, and will not have initial contact after application, as required by Applicants' claims.

If two superabsorbent polymer precursor compositions are separately applied as microdroplets, then the only way to form superabsorbent particles of the same size range is to apply the two compositions in precisely the same spaced apart locations. This cannot be accomplished using a random spraying process, but it can be accomplished using a non-contact printing process as recited in Applicants' claims. A random spraying process, used to apply both precursor compositions, would cause microdroplets of the two precursor compositions to land in different locations, or in locations that only partly overlap. The superabsorbent particles would form only where the two precursor compositions coincide.

The Examiner rejected Claims 1, 3-6, 10-28 and 30-32 under 35 U.S.C. §103(a) as obvious over Itoh et al. (U.S. Patent 4,892,754) in view of Trokhan et al. (U.S. Patent 5,547,747) and either Anderson et al. (U.S. Patent 6,103,061) or Wisneski et al. (U.S. Patent 6,533,989). This rejection is respectfully traversed, for the following reasons.

a) There Is No Prima Facie Case of Obviousness

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be a suggestion or motivation to modify the primary reference or combine the teachings of the references. Second, there must be a reasonable expectation of success. Third, the combined references must teach all of the claim limitations, MPEP 706.02(j); In Re Vaeck, 20 USPQ 2d 1438 (Fed. Cir. 1991).

The Examiner alleges that Itoh et al. discloses a preferred particle diameter for a sprayed monomer solution of about 30-300 microns and a particle diameter for superabsorbent particles of about 100-250 microns (Col. 6, lines 23-40 and Example 5). Neither passage discloses separate application of first and second superabsorbent polymer precursor compositions, both as microdroplets having a diameter of about 10-1000 microns.

In one disclosed instance, only one monomer solution is applied which contains all of the reactive ingredients (Col. 3, lines 23-40). In another disclosed instance, one precursor composition is applied by spraying while another precursor composition is uniformly coated onto the substrate (Col. 3, lines 41-59 and Example 5). Applicants note that spraying an excess amount of a solution can form a uniform coating where the amount of liquid is large enough that the droplets converge on the substrate.

Applicants' claims require both first and second precursor compositions to be separately applied as microdroplets so that they initially contact each other on the fibrous web and react to form superabsorbent particles within the same size range as the microdroplets. This cannot be accomplished with spraying, but can be accomplished with a non-contact printing process. To accomplish this entirely by spraying, a person skilled in the art would need to invent a process for directing microdroplets of first and second superabsorbent polymer precursor compositions to the same locations on a substrate. Itoh et al. does not disclose, suggest, or enable such a technology.

Again, it is within the scope of Itoh et al. to uniformly coat a first superabsorbent polymer precursor composition onto a substrate and apply a second superabsorbent polymer precursor composition by spraying. Superabsorbent particles are formed only in locations where the first and second precursor compositions coincide, and not in locations where the first precursor composition is present alone. Such a process results in significant amounts of unreacted monomer, and is not suggestive of Applicants' claimed process.

Trokhan et al. discloses using a contact/embossing apparatus to apply an absorbent precursor composition to selected elevated regions of a textured substrate. Trokhan et al. teaches away from the claimed invention in at least two ways. First, Trokhan et al. requires a contact application process to create and maintain substrate texture (See Figs. 1-3). Applicants' claims are limited to a non-contact printing process. To substitute a non-contact printing process for the contact process of Trokhan et al. would render Trokhan et al. inoperable for its intended purpose. In Re Ratti, 123 USPQ 349 (CCPA, 1959) (If a proposed modification or combination of prior art would change the principle of operation of the prior art being modified, then the teachings of the references do not render the claims prima facie obvious). In Ratti, the reference taught a device

requiring rigidity for operation, whereas the claimed invention required resiliency. The present situation is analogous where Trokhan et al. plainly requires a contact process, whereas the claimed invention requires a non-contact printing process.

Second, Trokhan et al. teaches that where multiple printing stations are employed, they print at different locations on the substrate to form an osmotic absorbent structure having transverse gradient properties (Col. 11, lines 3-13). The present inventor, by contrast, inherently requires the first and second superabsorbent polymer precursor compositions to be printed at the same locations, each using a non-contact printing process. If the first and second precursor compositions were printed at different locations, they would not significantly react to form superabsorbent particles.

Finally, the printing/embossing rollers in Trokhan et al., and the resulting absorbent product, appear to have a macroscopic topographical structure. The reference does not suggest formation of micron-size range superabsorbent particles in micron-size range locations as required by Applicants' claims.

Anderson et al. discloses a process for applying a creping adhesive to a nonwoven web. Creping is a process by which a blade (e.g. blade 64 in Fig. 2) is used to peel a nonwoven web away from a roll to cause regions of out-of plane bending. The creping adhesive, applied at selective locations to the nonwoven web, facilitates initial bonding to the roll 60 and subsequent bending of the nonwoven web during peeling. The creping process is macroscopic, and forms a macroscopic topography on the nonwoven web. The process for applying a creping adhesive is not applicable to the deposition of microdroplets in the micron size ranges, or to the formation of superabsorbent particles in the micron size ranges, as required by Applicants' claims.

Furthermore, the subject matter of Anderson et al. has nothing to do with the claimed invention. For instance, the creping adhesive does not react to form a superabsorbent polymer. Instead, it acts only as an adhesive to facilitate the creping process.

Furthermore, the process cited by the Examiner at Col. 11, line 66 - Col. 12, line 38 of Anderson et al. is not a printing process. The disclosed hydraulic entangling process uses high speed water jets to rearrange and entangle nonwoven fibers. Hydraulic entangling has nothing to do with printing. The creping adhesive is applied by immersion

of a bonding roll in an adhesive bath, followed by direct contact between the roll and the substrate (see Fig. 2, bonding station 50, roll 54).

The patent to Wisneski et al. is not statutory prior art. See 35 U.S.C. §103(c). The patent to Wisneski et al. and the instant application are both assigned to Kimberly-Clark Worldwide, Inc. Wisneski et al. issued on 18 March 2003, long after the 14 December 2001 filing date of the instant application. Wisneski et al. is not available as prior art under any statute.

In summary, there is no suggestion or motivation to modify the teachings of the primary reference or combine the references to arrive at Applicants' invention. Furthermore, the combined references do not teach or suggest Applicants' claimed invention. Accordingly, there is no reasonable expectation of success in the prior art, as would be required to show obviousness. In re Vaeck, 20 USPQ 2d 1438.

b) The Obviousness Rejection is Based On Improper Hindsight

To reach a proper determination under 35 U.S.C. §103, the Examiner must step backward in time and into the shoes of a hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the Examiner must then determine whether the invention "as a whole" would have been obvious at that time to that person. Applicants' disclosure cannot be used to supply claim limitations not found in the prior art. MPEP 2142.

As explained above, Applicants' independent claims require that both first and second superabsorbent polymer precursor compositions are applied using a non-contact printing process. The primary reference (Itoh et al.) does not disclose such a process, nor does the secondary reference (Trokhan et al.), nor does the tertiary reference (Anderson et al.).

Applicants' claims require that the first and second superabsorbent polymer precursor compositions be applied as spaced apart microdroplets within a recited size range, and inherently require that they be applied in the same places, without prior contact. The primary reference (Itoh et al.) does not disclose such a process, nor does the secondary reference (Trokhan et al.) or the tertiary reference (Anderson et al.).

In view of the foregoing, the only way the obviousness rejection can be maintained is for the Examiner to rely on Applicants' disclosure as teaching missing limitations that cannot be found in the prior art. The prior art provides no teaching, motivation, or reasonable expectation of success. The rejection can only be based on improper hindsight.

c) Conclusion

Applicants' attorney believes that the claims are in condition for allowance. If the Examiner feels that any issues remain unresolved, then Applicants' attorney respectfully requests a telephone call from the Examiner, and a telephone interview.

Respectfully submitted,

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